

Name: \_\_\_\_\_  
PC: Solving Rational Equations

Date: \_\_\_\_\_

Do Now:

1. Simplify:  $\frac{4}{x-2} + \frac{x}{x+2}$

### Examples

1. Solve:  $\frac{4}{x} + \frac{2}{7} = \frac{8}{x}$

2.  $\frac{6x+18}{x+3} = 5$

3.  $\frac{2x}{x+5} + \frac{1}{x-5} = \frac{10}{x^2-25}$

**Steps for solving rational equations:**

1.

2.

3.

## Exercises

In 1-4, match the equation with the corresponding transformed equation, and state any necessary restrictions on the variable.

1.  $\frac{1}{z^2} - \frac{1}{3z} = \frac{1}{6}$

3.  $\frac{1}{z-2} + \frac{1}{z+3} = \frac{1}{z^2+z-6}$

2.  $\frac{4}{z-1} + \frac{4}{z} = \frac{3}{z-1}$

4.  $\frac{8}{z^2-4} + \frac{1}{z-2} = \frac{1}{z+2}$

a.  $2z+1=1$     b.  $6-2z=z^2$     c.  $8z-4=3z$     d.  $z+10=z-2$

In 5- 34, solve.

5.  $\frac{8}{14} = \frac{3}{m}$

6.  $\frac{2}{x} + 1 = \frac{1}{4}$

7.  $\frac{x-1}{4} = \frac{5}{6}$

8.  $\frac{x}{4} = \frac{16}{x}$

9.  $\frac{3}{p+2} = \frac{7}{8}$

10.  $\frac{2}{q} = \frac{q-1}{3}$

11.  $\frac{4}{m} - \frac{1}{m} = 3$

12.  $\frac{1}{b} - \frac{1}{2} = 1$

13.  $\frac{2}{p} + 1 = \frac{1}{4}$

14.  $\frac{2}{v} - \frac{2}{3} = \frac{1}{3v}$

15.  $\frac{1}{3} - \frac{2}{z} = \frac{1}{12}$

16.  $\frac{3}{2} + \frac{1}{y} = \frac{1}{4}$

17.  $\frac{1}{x^2} + \frac{2}{x} = \frac{9}{16}$

18.  $\frac{4}{u^2} - 10 = \frac{3}{u}$

19.  $\frac{1}{t} - \frac{2}{t-1} = \frac{2}{t}$

20.  $\frac{1}{w+2} + \frac{1}{w} = \frac{3}{w}$

21.  $\frac{z}{z-2} + \frac{z}{z+1} = 2$

22.  $\frac{2m}{m-2} - \frac{m}{m-1} = 1$

23.  $\frac{x}{2} - \frac{5}{2} = 2 - \frac{4}{x}$

24.  $\frac{r}{6} + \frac{1}{2} = \frac{1}{r} + \frac{1}{3}$

25.  $\frac{a}{4} + \frac{5a-20}{4a} = \frac{1}{a}$

26.  $\frac{3y^2}{y-1} + \frac{3}{2} = \frac{2y-1}{y-1}$

27.  $\frac{3d^2}{2d-1} + \frac{3d-4}{2d-1} = -2$

28.  $\frac{2n}{n+6} = \frac{3}{n-3}$

29.  $\frac{3x}{x-2} - \frac{2x}{x-3} = \frac{x+27}{x^2-5x+6}$

30.  $\frac{m-1}{2m+4} = \frac{m}{3m+15} - \frac{1}{m^2+7m+10}$

$$31. \frac{y}{y-2} + \frac{y+1}{y+2} = \frac{2y-1}{y^2-4}$$

$$32. \frac{b+3}{3-b} + \frac{3b+1}{b^2-9} = \frac{1-5b}{b+3}$$

$$33. \frac{2z}{z+5} - \frac{1}{5-z} = \frac{10}{z^2-25}$$

$$34. \frac{x}{x-4} = \frac{16}{x^2-16} + \frac{2}{x+4}$$